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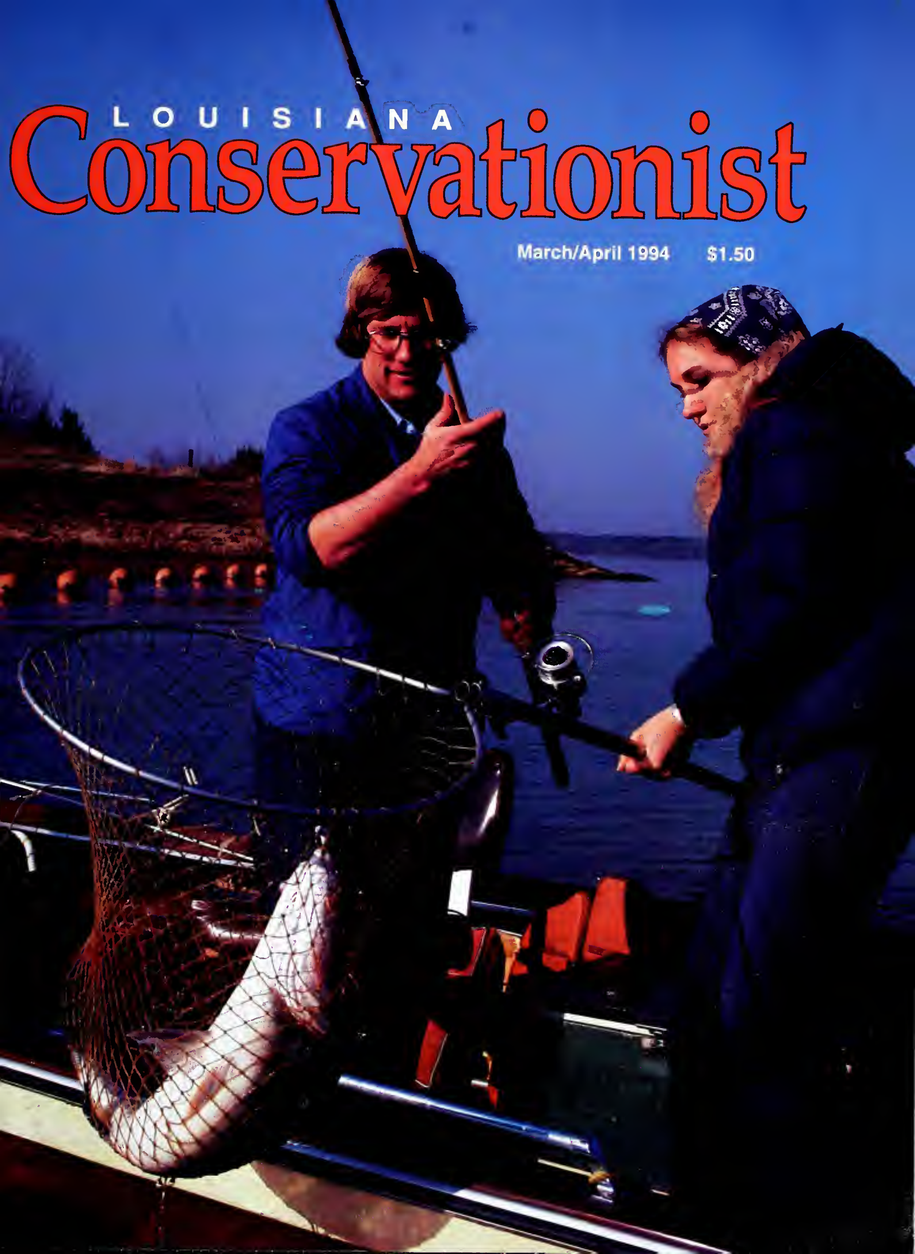

Comments

Joe L. Herring, Secretary

Your Department of Wildlife and Fisheries recently completed a series of public meetings throughout the state. We were quite pleased with the public response and expressions of continuing support for the department's efforts to professionally manage resources and sustain Louisiana's heritage of commercial and recreational outdoor pursuits.

For those who could not attend our public forums, I want to briefly recap our message:

This department is at a critical point with the future of our conservation and wildlife management programs at stake. We simply cannot continue to operate on traditional revenue sources. We have seen marked decreases in mineral royalties from department owned lands, and those decreases have not been ameliorated by an influx of state general tax revenues.

In addition, the legislature has assigned numerous new and expanded responsibilities to this department without providing funding. These include Natural Heritage, Non-game and Endangered Species programs, the Scenic Rivers System, aquatic weed control, and extensive environmental monitoring and permitting responsibilities.

Ultimately, funds had to be diverted from existing programs, including game management, habitat preservation, fisheries enhancement and improved boater access.

The department's planning position, reaffirmed forcefully during the recent series of public meetings, is that the need for additional revenue should not be met by yet another increase in license fees. Our sporting men and women, and our commercial fishing industry, have traditionally been the mainstay of the department's financial support. That was as it should be when the department's main function was enhancement of hunting and fishing opportunities.

The new mission of the modern Department of Wildlife and Fisheries, however, impacts the lives of every citizen in the state. So-called "non-consumptive" users of Wildlife Management Areas, Wildlife Refuges and public waterways represent the fastest growing segment of our constituency. Our many mandated programs touch the lives of every citizen. For example, we must perform studies, complete impact statements and approve permit applications for development projects throughout the state ranging from new housing developments to the burgeoning gambling casino industry. Because of the broad and general scope of our present duties, it is only right that the department be supported by the general public—by all the citizens who benefit from the programs and activities we perform.

Missouri set the national benchmark when that Legislature dedicated one-eighth-of-one-percent of the state sales tax for support of their fish and wildlife agency. A similar sustainable, dependable revenue source must be found to fund this department.

The inevitable alternative is a drastic reduction in the services performed by this agency and a deterioration (and possible closure) of public lands and facilities. That alternative must be avoided for the benefit of today's citizens and for the benefit of future generations.

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LOUISIANA **Conservationist**

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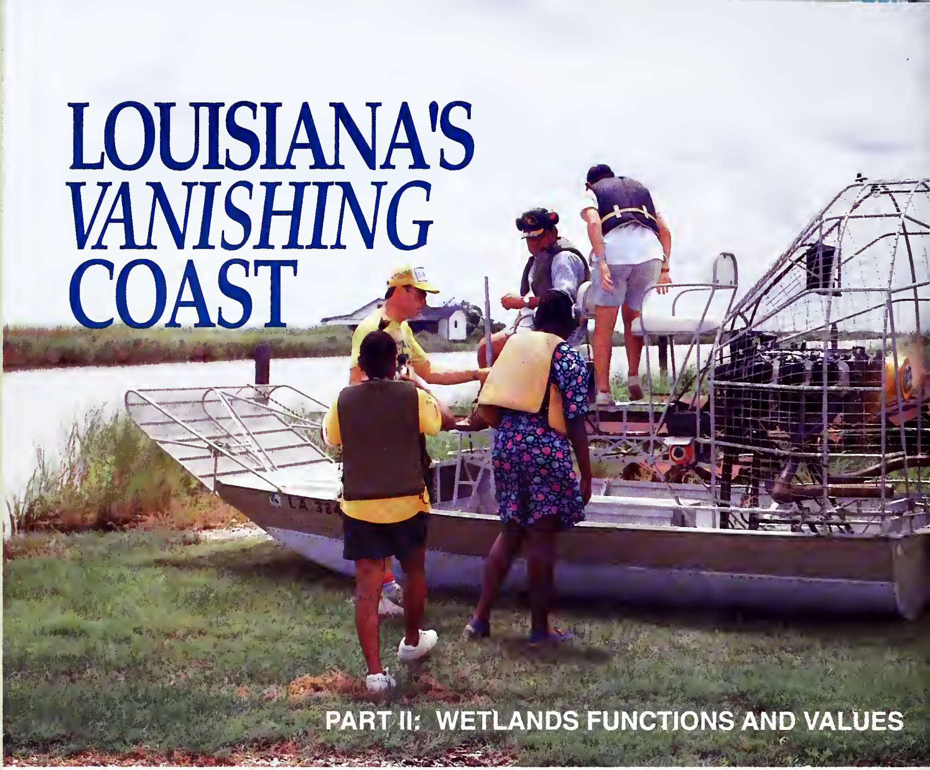
LOUISIANA'S *VANISHING* COAST



PART II: WETLANDS FUNCTIONS AND VALUES

Photo by Mark G. Shirley

BY PHILIP BOWMAN, DR. LEN BAHR & PAUL COREIL

Louisiana is one of the nation's leading states in commercial production, landing more than 1 billion pounds of shrimp, crabs, crawfish and other marine fisheries each year.

What do a pair of alligator boots, golden fried Louisiana shrimp, holiday oyster dressing, boiled crawfish, Brown Pelicans and Snow Geese have in common? All are dependent on the quantity and quality of Louisiana's coastal wetlands. Coastal wetlands are among the most productive natural environments on earth. Louisiana's coastal wetlands improve water quality, provide flood and storm surge protection, and provide the habitat base for the state's bountiful fish and wildlife resources. In addition, they support one of the state's fastest growing tourist industries.

Wildlife and fisheries production is closely linked to the vast quantities of detritus (particles of decayed plant material) produced in wetlands. In terms of organic material, wetlands are two to three times as productive as the most fertile agricultural cropland. This abundant vegetative productivity allows wetlands to provide valuable habitat and food to the aquatic systems.

This is the primary reason that Louisiana is one of the leading states in the nation in commercial fisheries production with annual landings in excess of 1 billion pounds. Specifically, Louisiana leads the nation in the production of shrimp, blue crabs, crawfish, menhaden and wild catfish and generally ranks first or second in oyster production. Of all the animal commodities produced in Louisiana on an annual basis, marine fisheries is the largest single component and provides an economic impact to the state of about $1 billion a year.

It is also no secret that Louisiana has some of the best recreational fishing in the nation, all of which is linked to and dependent upon the quantity and quality of the state's coastal wetlands. Saltwater recreational fishing alone provides more than 2.6 million man-days of fishing annually and produces an economic impact estimated to approach $1 billion a year.

Coastal wetlands in Louisiana produce more than 40 percent of the nation's wild fur harvest and enable Louisiana to lead the nation in alligator production.

Additionally, Louisiana's coastal wetlands provide wintering habitat for more than 5 million of the nation's waterfowl, providing hunters more than 784,000 man-days annually of recreation and generating an economic impact of more than $50 million.

In addition to obvious wildlife and fisheries values, our coastal wetlands are providing the state with a revitalized and rapidly growing industry. Eco-tourism, defined as tourism associated with ecological resource attractions, is extremely important to the economies of coastal parishes. Many believe that future economic viability of coastal Louisiana will more and more depend on eco-tourism. Specific eco-tourism activities include non-consumptive resource uses such as birdwatching, nature photography, nature painting, hiking, camping, shelling, boating, water skiing and swimming. The diversity of species and habitat types is largely responsible for coastal Louisiana's extremely celebrated eco-tourism treasure.

The vast coastal marshes are home to literally hundreds of different species of mammals, birds, fish, reptiles and amphibians, including several threatened or endangered species.

Colorful neotropical migratory birds, such as the Prothonotry Warbler and the Summer Tanager, heavily utilize the coastal cheniers during key spring migrations across the Gulf of Mexico from Central and South America. Thousands of visitors "flock" to coastal wetlands to enjoy this fantastic birdwatching experience. Several of the top birdwatching counties (parishes) in the United States are located in coastal Louisiana.

Numerous species of wading and shorebirds such as the Louisiana Heron and the Black-necked Stilt can be viewed on any given day throughout the Louisiana coastal zone. The diversity of wading and shorebird species, with more than 200 colony nesting sites, is also significantly responsible for Louisiana's top birdwatching status.

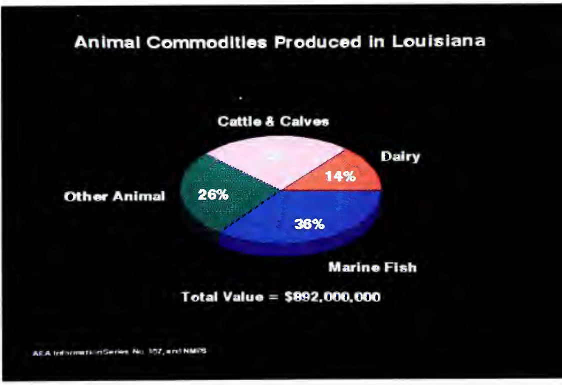
Most coastal Louisiana visitors ask to see the mysterious American alligator. Once listed as endangered in Louisiana, the alligator has fully recovered through extensive management by the Louisiana Department of Wildlife and Fisheries over the past 30 years. Today, hundreds of thousands of gators inhabit Louisiana's rich coastal marshes making "alligator viewing" an easy quest.

Popular mammal species commonly viewed by nature enthusiasts include white-tailed deer, nutria, muskrat, raccoon and coyote.

A variety of habitats unique to coastal Louisiana offer tremendous photographic, camping, hiking, boating, swimming and sight-seeing opportunities. These include natural beaches, coastal cheniers, cypress-tupelo swamps and fresh/brackish marshes.

Coastal beaches are available in both southeast and southwest Louisiana for public use and enjoyment. Additionally, a large variety of sea shells offer countless hours of investigation and pleasure to many inquisitive beach combers.

Unique coastal cheniers (oak ridges), running east-west along Louisiana's coastal region, represent the location of ancient abandoned beaches that were isolated when marine sediments were deposited along the beach rim. Most cheniers are several feet higher than the surrounding coastal marshes and are inhabited by ancient moss covered live oak trees. People come from all over the world to view these unique chenier highlands that are peculiarly surrounded by vast tracts of low coastal marshes.



Marine fisheries is the state's most important single source of animal commodities, impacting Louisiana's economy to the tune of about $1 billion.

LDWF file graphic

Wildlife photographers and nature lovers throughout the United States are drawn annually to Louisiana by its natural beauty and diversity, making the protection and restoration of the state's more than 3 million acres of coastal marshes the right choice.

Photo by Paul Coreil

The Atchafalaya Basin, located in south central Louisiana, continues to intrigue wildlife photographers and nature lovers throughout the United States. The Atchafalaya is recognized as one of the largest remaining river basin swamps in the United States and its beauty has led to the development of numerous "swamp tour" enterprises that cater to interested visitors from around the world.

Natural beauty and diversity alone make public investment in the protection and restoration of Louisiana's more than 3 million acres of coastal marshes the right choice. We must all continue to work together to assure that this valuable legacy can be passed on to future generations.

Wetlands also serve an extremely valuable educational role by providing areas for studying different plant and animal species in a natural setting. Individual wetlands provide outdoor classrooms where teachers can demonstrate the workings of nature to their students and unique laboratories where scientists can make discoveries that benefit society and provide a better understanding of life itself.

Healthy wetlands also provide one of nature's own water treatment systems.

Natural bodies of water contain diluted concentrations of the many different chemicals required for plant growth, especially nitrogen and phosphorus. When agricultural fertilizers, animal wastes and topsoil wash into waterways, or when sewage (treated and untreated) and urban street runoff flow into waterbodies, these same chemicals reach unnaturally high concentrations and become pollutants. This all too common situation fertilizes the water, causing "eutrophication" or excess production of certain forms of floating single celled plants (algae). Eutrophication can lead to thick green, smelly mats of algae that can use up all of the dissolved oxygen during the night and cause fish kills.

Many wetland plants are extremely efficient at removing excess nutrients (and even some toxic chemicals) from the water column. This phenomenon results from a combination of bacterial processes and the plants assimilating nutrients for normal growth. The wetland plant groups that have this capability include: (1) submerged aquatic vegetation like water milfoil; (2) emergent vascular plants, such as blackrush, bulltongue or cattails; and (3) floating leaf plants such as the ubiquitous water hyacinth and duckweed.

This property of efficient nutrient absorption turns wetlands through which polluted water flows into natural "water treatment plants" that can effectively reduce the concentration of nutrients (and even some heavy metals) to background levels.

The stems of wetland plants can also effectively filter out suspended sediments by slowing rapidly flowing water so that the sediment particles drop out. In this way, wetlands can make even very turbid water relatively clear. The quiet water characteristic of bayous that meander slowly through Louisiana swamp forest is black and clear, and it is usually clearly distinguishable from the brown, cloudy water in artificial canals that receive land runoff but that are isolated from wetland plants.

Water quality in coastal Louisiana has declined significantly since humans began heavily impacting the system during this century. Without our coastal wetlands, this decline in quality would be considerably more serious than it is.

Wetlands have been compared to giant sponges that have the ability to hold and store large quantities of water. Wetlands have a remarkable capacity to absorb excess water when the water table is high, such as during high river stages or periods of heavy rainfall. This capability can prevent flooding and allow excess water to be released gradually as the water table falls. This is a primary reason why the frequency of local flooding typically increases following the major conversion of wetlands area.

Exceptionally severe coastal storms, particularly hurricanes, result in storm surges or tidal waves 10 feet or more in height that can wash far inland on Louisiana's flat coast. Healthy coastal wetlands absorb and buffer the energy from these surges and significantly reduce their inland progression. Dense stands of marsh grass create a frictional drag that converts storm energy to heat. A 1980 study estimated that the loss of one mile in depth of wetlands across the entire stretch of Louisiana coastline would increase annual hurricane damages significantly per mile per year.

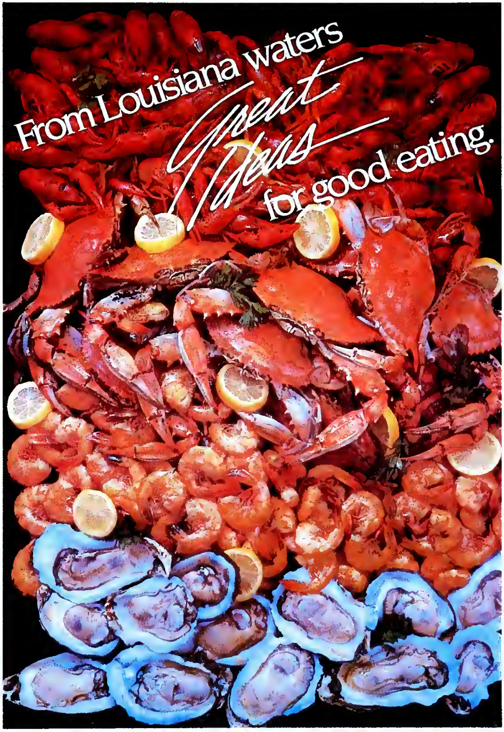
And finally, the value of Louisiana's coastal and offshore oil and gas exploitation industry is immense. Oil and gas production in Louisiana is not limited to the coastal zone, but some of the richest reserves have been discovered deep beneath our coastal wetlands and offshore in the open Gulf of Mexico. Louisiana provides about 15 percent of the crude petroleum and more than 20 percent of the natural gas used in the United States. Nearly 90 percent of this production comes from our coastal area and adjacent offshore waters.

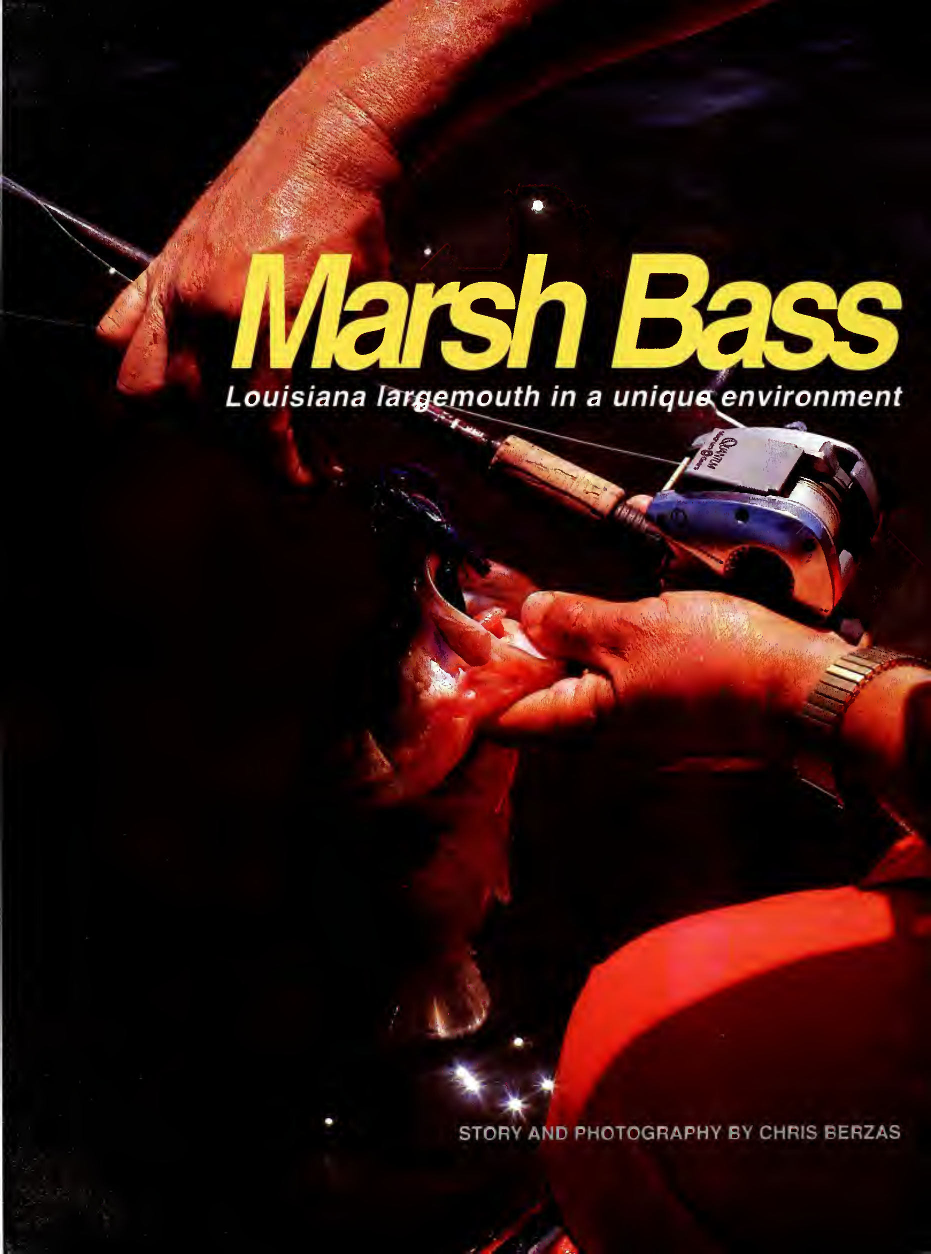
Certain geological features have trapped and concentrated oil and gas into deposits that can be recovered efficiently. These features include numerous salt domes formed by the enormous weight of a mile thick layer of sediments accumulating during the 7,000 year development of the coastal zone. Thus, sediments that provided the base for Louisiana's huge expanse of coastal wetlands also helped concentrate deposits of fossil fuel.

It is evident that Louisiana's prolific coastal wetlands provide literally billions of dollars in economic benefits for both the state and the nation. The loss of these irreplacable wetlands would have catastrophic consequences. In the next issue, we will explore how nature built our coastal wetlands and, just as importantly, why this national treasure is now disappearing. ■

Louisiana is known for good food, much of which would not be possible without the enormous marine fisheries found here.

Photo courtesy of La. Seafood Promotion and Marketing Board





Marsh Bass

Louisiana largemouth in a unique environment

STORY AND PHOTOGRAPHY BY CHRIS BERZAS

Quite clearly the fish were there!

Every few minutes a school of green trout would issue up from holes in submerged grass or nearby cane thickets.

We could tell there were plenty of them since we could observe them rolling, their whiter sides and bellies just glistening back towards the easterly sun.

We started with spinnerbaits. Well thrown white/chartreuse combinations or just plain old white 1/4-ounce spinnerbaits would hook plenty of these finnies.

"Look here, Charles," I told the vocational school principal and avid angler. "I seem to have a bigger one, the way this fish is pulling."

We both laughed. What I had really done was hook one of these fish in its side. You just couldn't help it. There were so many of them that we later hooked a few in other unconventional places as well.

Charles Leon and I were fishing off of Minnor's Canal in Terrebonne Parish near Houma. We found these 'marsh bass' in water bordering Nature Conservancy Land, approximately halfway between the Intracoastal Canal and Lake DeCade.

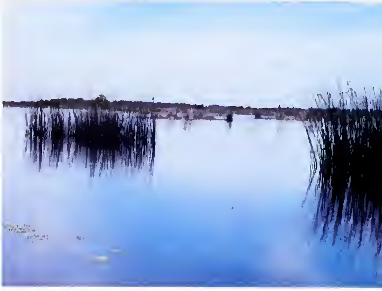
After catching and releasing 30 or so of these brackish water largemouths, we observed that only one or two exceeded 12-inches in length. Most averaged near 10-inches, yet ounce for ounce these bantam lightweights were feisty fighters and never once were we bored with our angling endeavors on that day.

We moved on down Minnor's Canal a little later to a cut where water was running into the canal from the marsh. Leon tied on a deep running crankbait and it wasn't long before he encountered a real tug'o'war with a finned fish of another species. The angler was rewarded with a huge redfish, lagniappe for our efforts on this marsh excursion.

Moving then into the waters of Lake Theriot, we found a few more marsh bass, some responding to bladed topwaters with many more taking a preferred liking to red shad and tequila 4-inch ringworms. All total, well over 50 bass were caught and released on that day, with many local anglers telling us that "it was a poor day for fishing." In response, Leon and I just looked at each other in amazement, our eyes communicating some disbelief over such a statement. After all, we were much more accustomed to fishing for largemouths in inland bayous and reservoirs, places where bass are never encountered in such densities as we experienced on that wonderful day in the marsh.

Louisiana 'marsh bass' have been highly prized by coastal anglers and others for much fun and adventure on hook and line. Their high densities and the feisty action they provide are just a few of the reasons for their popularity.

Upon attempting to find a few facts about these finnies, one is reminded of a doctoral dissertation completed by then-student Michael Meador under the supervision of William Kelso, Ph.D, of Louisiana State University. The study, conducted from 1985-87, is considered a benchmark in terms of unraveling some real facts regarding these fish.



Marsh bass have been highly prized by coastal anglers for the fun and adventure of the hook and line action.

Unlike Florida bass, 'marsh bass' do not appear to be a different subspecies of our native northern largemouths. What Meador and Kelso found was that, when compared to the same age bass from inland waters, most marsh bass were small, "although growth rates of older marsh bass equaled or exceeded those of freshwater fish" (Meador & Kelso, Doctoral Dissertation, 1988).

What is interesting here is that Meador accounts for this differing growth rate in terms of the marsh bass' specific adaptation to their unique marsh environment.

The scientists observed quite readily that marsh bass are indeed shaped a little differently, being shorter yet thicker and broader than inland largemouths of the same age. They are not 'poor' fish, "their growth is just different" from growth of other largemouths.

According to Meador's dissertation, both marsh bass and inland largemouths were exposed for 120 days to four differing salinity (salt) levels, 0, 4, 8, and 12 parts per thousand (ppt). What was interesting was the fact that the growth rate of marsh bass did not appear to be affected at 0, 4 and 8 ppt levels. However, "growth of freshwater (inland) largemouth bass held at 8 ppt was significantly lower than growth at 0 ppt. All fish held at 12 ppt stopped feeding within weeks after the experiment began and died before the experiment ended" (Meador & Kelso).

Another suggested factor that may influence bass growth in the marsh has to do with the unique biological factors regarding marsh forage and predation between species. In his dissertation, Meador noted that previous research had demonstrated "marsh bass from the Gulf Coast consume a lower percentage of fish and a higher percentage of invertebrates" than inland largemouths.

Samples of marsh bass from electroshock surveys indicated that under low salt levels marsh bass were located deep within cover of "rooted vegetation." In such an environment, marsh bass would definitely find more insects and small crustaceans to feed on, a unique adaptation to the marsh. On the other hand, inland largemouths appear to be the chief predator in our bayous, lakes and reservoirs enabling them not to depend upon such thick cover as their marsh brethren. Also, inland bass appear to depend more on fish for prey.

Small, 1/4 ounce spinnerbaits are among the most popular lures used to entice marsh bass. Others favorites include 4 inch plastic worms, imitations crabs and crawfish and small topwater lures.

From much of the above, one can see where Meador could infer that marsh bass appear to depend on thick cover not only for diet's sake, but also for the fact that they may more easily become prey from other brackish water species. Meador specifically suggests that large predators such as the alligator gar (*Lepisosteous spatula*) that are common in Gulf Coast brackish waters may play a role in keeping marsh bass tied to thick cover. Kelso also remarked in an interview that redfish may be another predator for marsh bass.

The above inferences are not only based on an assumption but on some evidence found on the bodies of sampled marsh bass. According to Kelso, a moderate percentage of bass had wounds suggesting their prey status in the marsh. In the above mentioned marsh angling adventure, Leon and this writer caught at least two marsh bass with such wounds, giving some credence to Kelso's hypothesis. But more significantly, we witnessed garfish attempting to feed on our cluster of marsh bass found near Nature Conservancy lands off of Minnor's Canal. Indeed, this writer had his 17-pound line snapped by what appeared to be a large redfish in the same vicinity.

Another interesting aspect of the study had to do with the observed behavior patterns exhibited by a sample of adult marsh bass with ultrasonic tags implanted internally. When salt levels were increased in the marsh to 8 ppt, no tagged adult bass could be found within a five mile range of the study site.

Evidently, although marsh bass appear to be somewhat more tolerant to increasing salinity levels, they do have their limits and respond by migrating to other less salty areas. Therefore, if the tide is coming in or southerlies are pushing much salt water into the marsh, you can bet your spinnerbait that marsh bass fishing may be poor.

This scientific finding probably accounts for the fact that marsh bass fishing is usually better from December through April, months where northerlies play a big role in keeping much salt out of the marsh. When the southerlies begin in earnest, usually June through September, anglers will fare better by finding marsh bass in more northern, deeper waters bordering the marsh.

According to Dr. Kelso, Meador's studies were the first describing physiological and behavioral characteristics of these brackish water bantams. Unfortunately, there have been no additional funds to continue research regarding these uniquely adapted bass. Hopefully, more funds can be generated either through research grants or from the private sector in the quest of further understanding marsh bass adaptation and behavior.

It is important to note that Meador and Kelso's studies were conducted with marsh bass found in canals near Cutoff, Louisiana. Inland Fisheries Biologist Gary Tilyou with the Louisiana Department of Wildlife and Fisheries suggests that the findings of these studies may be more specifically applicable to 'marsh bass' in this area and may or may not generalize to bass found in other marshes in Louisiana.

Where to find marsh bass?

These finnies occur wherever freshwater and saltwater meet in the marsh, all the way from the mouth of the Mississippi River to the brackish water marsh bordering Lake Calcasieu to the west.

The most popular of lures continues to be small spinnerbaits, whereas plastics to include 4-inch worms, small crawfish and crabs are traditional baits to entice these fish to your hook and line.

The Bayou State's bass fisheries are blessed indeed. Anglers have only to pick and choose whether it's fishing for the Florida bass lunkers of our quality or trophy lakes, enticing Kentucky (spotted) bass in our streams and rivers, luring native largemouths in our lakes and bayous, or battling feisty, bantam marsh bass found all along our coastline.

After all, we do live in The Sportsman's Paradise! ■

TURKEY HUNTING

a privilege to be guarded

BY ANDY CRAWFORD
PHOTOGRAPHY BY
DAVID MORELAND

Each spring tens of thousands of devoted Louisiana outdoorsmen swarm into the state's forests in pursuit of one of Mother Nature's wiliest creatures — the Wild Turkey. With their sharp sense of hearing and even sharper eyes capable of seeing the most minute movement, this bird offers the ultimate in hunting experiences.

The challenge of calling this cautious bird within shotgun range (usually no more than about 30 yards) has resulted in turkey hunting becoming one of the fastest-growing outdoor sports in the state, with 22,000 hunters participating annually.

With expanding popularity, however, comes the danger of looking at turkey hunting as a right instead of what it truly is — a privilege to be closely guarded and protected.

Louisiana hunters in the early decades of this century learned this lesson the hard way. What once was a native Wild Turkey population of an estimated 1 million quickly dwindled to disastrously-low levels: between the turn of the century and 1946, unregulated hunting coupled with habitat alteration by expanding timber and agricultural industries resulted in the plummeting of Wild Turkey numbers to less than 1,500 in the 40 parishes that once were home to the magnificent birds.

Fortunately, there were sportsmen-conservationists who realized that, if left to fend for themselves, the Wild Turkey would join the ranks of extinction in Louisiana. The first turkey season was established in 1902, to run from Nov. 1 to March 31, but there still was no bag limit. The next step, taken in 1905, was little better: a gobblers-only regulation went into effect, but enforcement was pitiful and, even for those hunters who bothered following the new law, the legal bag limit was set at an amazing 25 gobblers per day.

Turkey hunting finally was prohibited in this state in 1933, but again enforcement was so lax that hunting the few remaining birds continued unabated and, with habitat destruction continuing, depletion of the state's turkey population proceeded.

Finally, in 1948 the Wildlife and Fisheries Commission dedicated some of its increasing license-sale revenue to a turkey restoration program. These funds, matched by money from the Pittman-Robertson Federal Aid in Wildlife Restoration Act, made possible the reintroduction of Wild Turkeys to areas that had long since lost these beautiful birds.

Initial efforts by the Wildlife and Fisheries Commission (now the Department of Wildlife and Fisheries) were less than successful. About 5,000 turkeys were hatched, reared in captivity and then released into the wild between 1949 and 1953. The only benefactors of these releases were the state's predators: domestication of the turkeys through captive rearing had robbed them of the ability to survive in the wild.

There also were indications that these pen-raised birds were transmitting diseases to the existing wild population of turkeys, furthering the decline in healthy Wild Turkey populations.

By the 1960s, researchers had learned that the only viable source of birds for restocking lay with trapping and relocating native Wild Turkeys from healthy, breeding stocks. This technique was aided by advances in the so-called "cannon net," which proved far more superior than previous methods of trapping the wild birds.

During this decade, 1,504 Wild Turkeys were trapped from wild flocks and released in 82 locations in 41 parishes. Although some

Cannon nets are used by LDWF personnel to capture Wild Turkeys, above, for restocking efforts in other areas of the state. Before being released back into the wild, each turkey is banded, at right. These bands, bottom, allow biologists to accumulate harvest information and to track turkey movement.

efforts were, predictably, failures because of changes in available habitat and the criminal actions of poachers, other releases were extremely successful. Some of these new flocks were quickly providing turkeys for stocking efforts in other areas.

Availability of suitable habitat was an important part of these success stories, but key to the continued growth of turkey populations has been local public protection and support for game law enforcement.

"We got the public involved," said LDWF Turkey Study Leader Danny Timmer.

Through the next three decades, more than 4,000 Wild Turkeys have been stocked in 40 parishes and about 90,000 of the birds can now be found in the state.

Currently, the department is about a year away from completing the major statewide restocking effort. The last large areas of available habitat in the northern and southeast portions of the state have been covered and LDWF biologists are now working in Beauregard and Allen parishes to ensure the majority of habitat suitable to carry breeding populations of turkeys in southwest Louisiana has been stocked. With completion of these releases, the department's stocking program will be essentially completed.

The restocking process has gone through some changes since it began. "We've made mistakes in the past, but we've learned from those mistakes," Timmer said.

As it now stands, turkeys are captured from established wild flocks and moved to an area that is underpopulated or has no population of turkeys and released. Usually 20 birds are released at each release site, which is located on at least 5,000 acres of uninterrupted suitable turkey habitat with adequate protection.

After stocking in a given area is complete, hunting usually is not allowed for about five years. This allows Wild Turkeys to establish a solid breeding population capable of withstanding hunting pressure.

"Turkeys do take a good hard knock when we open a new area for hunting because they've never been hunted and they're real vulnerable," Timmer said.

This time period also allows the birds to expand their range by moving into areas that were not stocked, a natural tendency facilitated by releasing "blocks" of turkeys in several different areas of a given parish and allowing the flocks to find one another. Turkeys, usually young gobblers, are known to move as much as 15 miles each year in search of a "niche" to fill in the available habitat.

"We have to give them time to intermingle," Timmer said.

When hunting is allowed in newly-stocked areas, the season is kept short and falls late in the spring. Spring is the normal breeding period for turkeys.

"We have to allow the gobblers to breed first to give turkeys a better foothold" before the population of gobblers is lowered by hunters, he said.

Timmer said he is proud of the success of the massive statewide restocking effort. "We've had some ups and downs, but since 1985 stockings have been successful."

Proof of this success can be found by looking at the current turkey hunting season: gobblers-only hunting is now possible in 45 of the state's 60 parishes.

In those parishes in which populations are not strong enough yet to support hunting, turkeys can now at least be seen and their gobbles heard in the wild. It is not inconceivable that, within the next five years, turkey hunting in these areas of the state also will be possible.

Turkey hunting currently generates about $6.01 million annually for the state's economy as 22,000 hunters buy licenses and supplies to pursue this beautiful game bird. In all, 152,000 hunter-days are devoted annually to harvest about 9,000 Wild Turkeys, a harvest that only 50 years ago would have resulted in extinction of this fowl in Louisiana.

Despite the success of continuing efforts to strengthen and expand the state's Wild Turkey population, the numbers will never reach those of yesteryear — habitat destruction and alteration alone makes this an impossible goal. With continued vigilance, however, we can ensure that future generations can enjoy the thrill of hearing earth-shattering gobbles and attempting to outsmart the wary birds each spring. ■

A turkey is released back into the wild after being captured and moved to another area of the state. Such releases have allowed restoration of Louisiana's turkey populations after the species was nearly wiped out by the middle of this century.

Hooded Warbler
Wilsonia citrina

Yellow-throated vireo
Vireo flavifrons

Neotropical Birds on Decline

American Swallow-tailed Kite
Elanoides forficatus

Prairie Warbler
Dendroica discolor

BY BILL VERMILLION
PHOTOGRAPHY COURTESY OF
CORNELL LABORATORY OF
ORNITHOLOGY

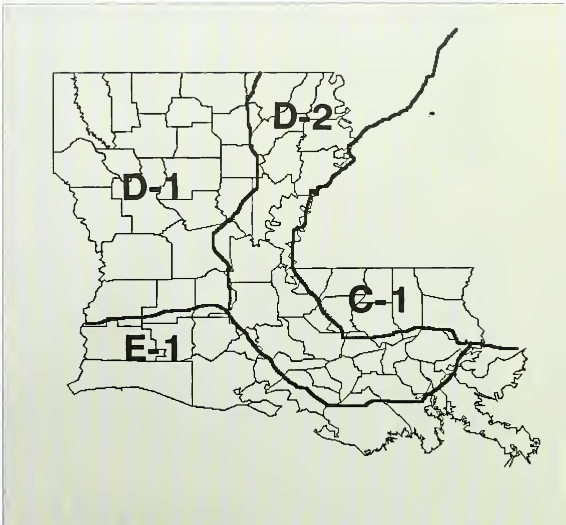
Miners once carried caged canaries with them into the mines. The birds served as an early warning system. Canaries are more sensitive to toxic gases than humans, and if they showed signs of distress, miners knew the mine environment was not safe and it was time to get out. Now, an analogous scenario has developed on a continental scale. More than 25 years' worth of data from Breeding Bird Surveys show significant declines in the populations of many species of neotropical migratory birds. These declines point to major environmental changes in North, Central and South America. To address these problems with neotropical migratory birds, a collection of federal and state agencies, industries, nonprofit organizations, universities and concerned citizens has coalesced into an organization known as Partners in Flight - Aves de las Americas. This organization's goals are to identify the reasons for declines of neotropical migratory birds, develop the best management strategies to halt the declines, and to implement these strategies on the ground.

What is a neotropical migratory bird? This term refers to species that breed in temperate North America, roughly north of the United States/Mexican border, and winter in Central America, South America and the West Indies. The Partners in Flight - Aves de las Americas initiative has focused attention primarily upon species besides wading birds and waterfowl, as there are currently programs in place that benefit these species. The list of neotropical migratory birds includes various species of kites, hawks, falcons, owls, nightjars, swifts, hummingbirds, woodpeckers, wrens, thrushes, vireos, warblers, grosbeaks, buntings, sparrows, orioles, tanagers and finches. Obviously, this is an extremely varied group, with dissimilar habitat requirements and life cycles. Developing management strategies for such a diverse species assemblage is no small task.

Reasons for declines in populations are numerous but the overriding factor is loss of habitat. Since these birds are essentially citizens of two continents, they face pressures on both their breeding grounds in North America and their wintering grounds in Central and South America and the West Indies. In the United States and Canada, forest conversion and fragmentation is impacting many species. Many of the species showing precipitous declines are those that require large, unbroken tracts of mature forest for breeding. Equally hard-hit, however, are many species that nest in open prairies, as these areas have also been significantly altered. On the wintering grounds in the new world tropics, increased demands on the land from the expanding human population result in more habitat lost to homesteaders' slash-and-burn agriculture, plantations, cattle ranches and urban expansion.

Forest fragmentation on the North American breeding grounds has not only eliminated habitat outright, but has also favored groups of animals that prey upon or parasitize neotropical migratory birds. Fragmentation creates edge habitat, a transition zone between open habitat and dense forest cover. Edge habitat favors nest predators such as raccoons, skunks, feral house cats, Blue Jays and crows by increasing access to forest interior nests. Also benefited by easier access to nests is the Brown-headed Cowbird (*Molothrus ater*). This bird is a nest parasite. The female does not build a nest of her own, but lays her eggs in those of other bird species. The young cowbird is raised by its surrogate parents at their own offspring's expense. The closer a nest is to a forest edge, the more likely it will be para-

Declines in the populations of many species of neotropical migratory birds point to major environmental changes in North, Central and South America.



Species of greatest concern include the Yellow-billed Cuckoo, at right, and the Kentucky Warbler, below. Small-scale wildlife refuges for these and other beautifully-plumed birds can easily be created in your yard by planting a variety of native trees, shrubs, vines and herbaceous plants to provide food and shelter .

sitized by a cowbird or robbed by nest predators. Other problems facing neotropical migratory birds include indiscriminate pesticide use, free-roaming house cats, illegal shooting and collisions with man-made structures during migration.

To address the perceived declines in these species' populations, Partners in Flight - Aves de las Americas began by dividing North America into regions based upon the United States Department of the Interior, Fish and Wildlife Service's Breeding Bird Survey physiographic regions map. The next steps were to assign representatives for each region, develop lists of neotropical migrant species breeding in the region and rank these lists to determine species at greatest risk. Species are given a numerical ranking or concern score based upon several criteria. Once a list is developed, species can be grouped according to habitat requirements and management needs and goals can be identified. These management plans can then be passed along to land managers in the region for implementation.

Louisiana includes portions of four physiographic regions (see map on page 15). The East Gulf Coastal Plain, **C1**, includes the Florida Parishes north of Lake Pontchartrain in southeastern Louisiana. The West Gulf Coastal Plain, **D1**, includes that portion of Louisiana west of the Mississippi alluvial floodplain and north of the coastal prairie region of the southwestern part of the state. Physiographic region **D2** contains the Mississippi Alluvial Plain of Louisiana. Louisiana also contains part of one additional physiographic region, E1, the Coastal Prairies. Looking at all physiographic regions within the state, breeding neotropical migratory bird species of greatest concern include:

Bachman's Warbler (*Vermivora bachmanii*) - C1, D2 (extinct?)
Swainson's Warbler (*Limnothlypis swainsonii*) - C1, D1, D2, E1
Prothonotary Warbler (*Protonotaria citrea*) - C1, D1, D2, E1
American Swallow-tailed Kite (*Elanoides forficatus*) - C1, D2, E1
Hooded Warbler (*Wilsonia citrina*) - C1, D1, D2
Yellow-billed Cuckoo (*Coccyzus americanus*) - C1, D1, D2, E1
Eastern Wood-Pewee (*Contopus virens*) - C1, D1, D2, E1
Yellow-throated Vireo (*Vireo flavifrons*) - C1, D1, D2
White-eyed Vireo (*Vireo griseus*) - C1, D1, D2, E1
Kentucky Warbler (*Oporornis formosus*) - C1, D1, D2, E1
Mississippi Kite (*Ictinia mississippiensis*) - C1, D1, D2, E1
Orchard Oriole (*Icterus spurius*) - C1, D1, D2, E1
Chuck-will's-widow (*Caprimulgus carolinensis*) - C1, D1, D2, E1
Great Crested Flycatcher (*Myiarchus crinitus*) - C1, D1, D2, E1
Scissor-tailed Flycatcher (*Tyrannus forficatus*) - D1, D2, E1
Wood Thrush (*Hylocichla mustelina*) - C1, D1, D2, E1
Prairie Warbler (*Dendroica discolor*) - C1, D1, D2
Painted Bunting (*Passerina ciris*) - C1, D1, D2, E1
Dickcissel (*Spiza americana*) - C1, D1, D2, E1
Acadian Flycatcher (*Empidonax virescens*) - C1, D1, D2, E1.

You don't have to be the manager of a million-acre wildlife refuge to implement practices benefiting neotropical migratory birds.

Create a small-scale wildlife refuge in your yard. The typical yard, consisting of a close-cropped lawn and a few geometrically-pruned shrubs, is not very wildlife-friendly. Plant a variety of native trees, shrubs, vines and herbaceous plants to provide food and shelter for many species of birds and other wildlife. The ideal yard would have large deciduous and evergreen trees to furnish shelter for birds and insects for insectivorous birds; fruiting trees, shrubs and vines for fruit-eating birds; dense evergreen shrubs for shelter; snags for cavity nesters such as woodpeckers; flowering plants and vines for hummingbirds; and a source of water. Supply nest boxes for cavity nesters if standing dead wood is scarce in your yard. Construct boxes for a specific bird species; do not make generic bird boxes. Do not allow House Sparrows (*Passer domesticus*) or Starlings (*Sturnus vulgaris*) to occupy boxes intended for native birds. These two species are aggressive exotics that compete with native birds for nest cavities, often destroying eggs and killing nestlings in the process.

Reduce or eliminate pesticide use in your yard and garden.

Spay/neuter pet cats and keep them indoors.

Learn the birds frequenting your yard. Buy a good bird field guide, study species breeding, wintering and migrating in your area, and keep a checklist or journal of sightings. Once you've learned the species in your area, participate in Breeding Bird Surveys, Breeding Bird Atlas projects, Christmas Bird Counts, Migration Counts or other monitoring programs in your area. Information gleaned from these various surveys is invaluable for determining bird populations and trends.

Get involved in the Partners in Flight - Aves de las Americas initiative. You can send for a free copy of the *Partners in Flight Newsletter* by writing to: Partners in Flight, National Fish and Wildlife Foundation, 1120 Connecticut Avenue, NW, Suite 900, Washington, DC 20036. You can also receive additional information on Partners in Flight, landscaping for wildlife, bird counts, etc., from Louisiana Natural Heritage Program, Louisiana Department of Wildlife and Fisheries, P.O. Box 98000, Baton Rouge, LA , 70898-9000, or call 504/765-2821.

We have the opportunity to be pro-active with the Partners in Flight - Aves de las Americas initiative. By acting now to conserve neotropical migratory birds, we can prevent continued declines that can result in species becoming endangered with extinction. For those who insist on assigning some sort of human or dollar value on species, and pose the question "What good are these dickey birds anyway?" let us not forget the canary in the coal mine. When it starts to suffer, it is a sign of potentially greater problems. Thus, we are inextricably linked to all life on earth and to the natural processes that define our environment. ■

Learn the birds frequenting your yard. Once you've learned the species in your area, participate in Breeding Bird Surveys, Breeding Bird Atlas projects, Christmas Bird Counts, Migration Counts or other monitoring programs in your area.

NO MORE FREE RIDE

BY

SARA ANN HARRIS

The Department of Wildlife and Fisheries hits the wall. Department Secretary Joe L. Herring cites a projected shortfall in the 1994-95 fiscal year of $3 million to the Conservation Fund, the heartbeat of the agency's operating funds. If current funding sources are not strengthened and new funding mechanisms are not instituted, the management of the state's wildlife resources will suffer. The current level of operation cannot be sustained after the 1993-94 fiscal year without adequate replenishment of department coffers.

It is no secret that continuing erosion of the value of the dollar weakens the buying power of every state agency. Financial planners of the wildlife agency cite inflation as among the top causes for the department's current financial difficulty. Though the operating budget figure has increased over the years, it has never compensated for the loss caused by the constant devaluing of the dollar. (See LDWF Budget and Inflation.)

Administrators also explain that the bottom has fallen out of one of the most important agency revenue sources. The department budget traditionally was bolstered by royalties paid by oil and gas companies that conducted exploration and production activities on state lands. This revenue source is drying up rapidly. In the 1983-84 fiscal year, oil and gas royalties accounted for $10.4 million of a total department budget of $34 million. By the 1992-93 fiscal year, that revenue had plummeted almost $7 million — down to $3.9 million. (See Bar Graph of Oil and Gas Royalties.)

Undersecretary Fredrick J. Prejean Sr., of the Office of Management and Finance, explained that faced with these two factors the department has planned carefully, built alternatives into the agency's financial structure and was able to provide carry-over dollars for each year. These dollars, however, cannot last indefinitely. In fact, there will be no carry-over money for the 1994-95 fiscal year. The free ride is over. Without immediate, serious and long lasting amendments to the basic operating budget, the department will not be able to provide the services and programs that so many Louisianians have come to rely on.

Herring points out that another factor must be seriously considered when evaluating the department's ability to continue providing these services. In the last 20 years, state and federal laws have mandated many new programs. Unfortunately, such legislation was often not accompanied by provisions for funding these programs. When other alternatives were not forthcoming, administrators had to absorb the costs of these programs in the department's basic operating budget and require staff to perform additional work during the same eight hour day.

Responsible stewardship has also required that the department establish new programs or expand existing ones, even when new funding sources were not available.

These mandated and added wildlife management programs have taxed the agency in terms of dollars, staff expertise and staff performance. There have been seven Habitat Management Programs and 13 Native Species Management Projects which the department has added or significantly expanded since 1973 and which have not provided funding to the operating budget. The Department of Wildlife and Fisheries is now straining beyond its limits.

The department has also instituted 17 new permitting mechanisms in order to satisfy the need to monitor specific activities which impact the ecosystem. Eligible persons and businesses pay a fee for the permit, but these monies cover only a small percentage of the cost of administering the monitoring program.

Herring added that as management of the state's many wildlife species and abundant fisheries becomes more complicated and as the general public demands more ethical stewardship, conservation laws and regulations must be put in place. The department's Enforcement Division has the difficult job of insuring that these laws are adhered to out in the field and on the state's remote waterways. There are currently over 750 violations that the enforcement agent is trained to be informed of and prepared to cite.

With a deep understanding of how important it is for the department to continue to conduct these programs, a finance committee has discussed possible solutions at length. As an integral part of the problem-solving process, they conducted a series of seven town meetings in November 1993 to gather ideas and suggestions on funding mechanisms from citizens across the state. This input will provide the backbone of an innovative budget package for presentation to the 1994 Louisiana Legislature.

Citizens may still have their ideas included in this package. They are urged to voice their opinions and mail them to: Undersecretary Fredrick J. Prejean Sr., Office of Management and Finance, Louisiana Department of Wildlife and Fisheries, P.O. Box 98000, Baton Rouge, LA 70898. ■

MANAGEMENT OF HABITAT

Programs the department has added since 1973 which were unaccompanied by new funding sources. Bold type indicates that they were mandated by state or federal law.

- The department has acquired management responsibility for seven wildlife management areas and one refuge since 1973.
- One significant and recently added component of land management responsibility is development and supervision of mitigation projects for impact to wetlands, as regulated by U.S. Army Corps of Engineers 404 permits.
- Numerous other **wetlands restoration projects.**
- Requirements for **estuary management** work continue to increase.
- Almost every division of the department is involved in the construction of an **expansive oil spill response plan.**
- The Forestry Program was expanded taking on stewardship of 380,000 acres of state-owned forest.
- The **Louisiana Scenic Rivers Program** was established in 1970 and strengthened in 1988. The department must protect 1,500 miles of river.

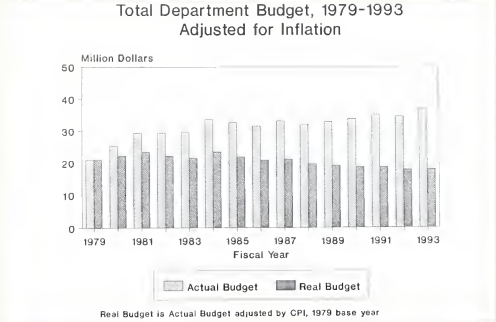
NATIVE SPECIES MANAGEMENT

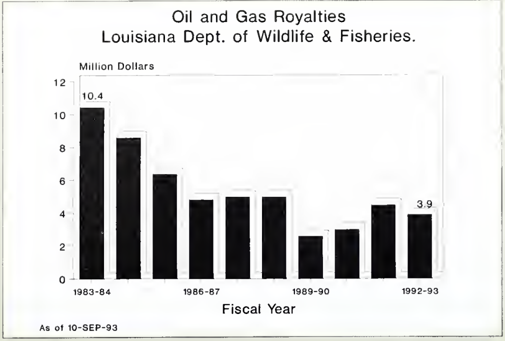
As the job of managing the state's wildlife resources becomes more specialized, the department is constantly called upon to apply their expertise toward the study of a particular species or group of species and make recommendations for the best conservation of these animals. These projects have been added since 1973 without additional funding sources. Bold type indicates that they were mandated by state or federal law.

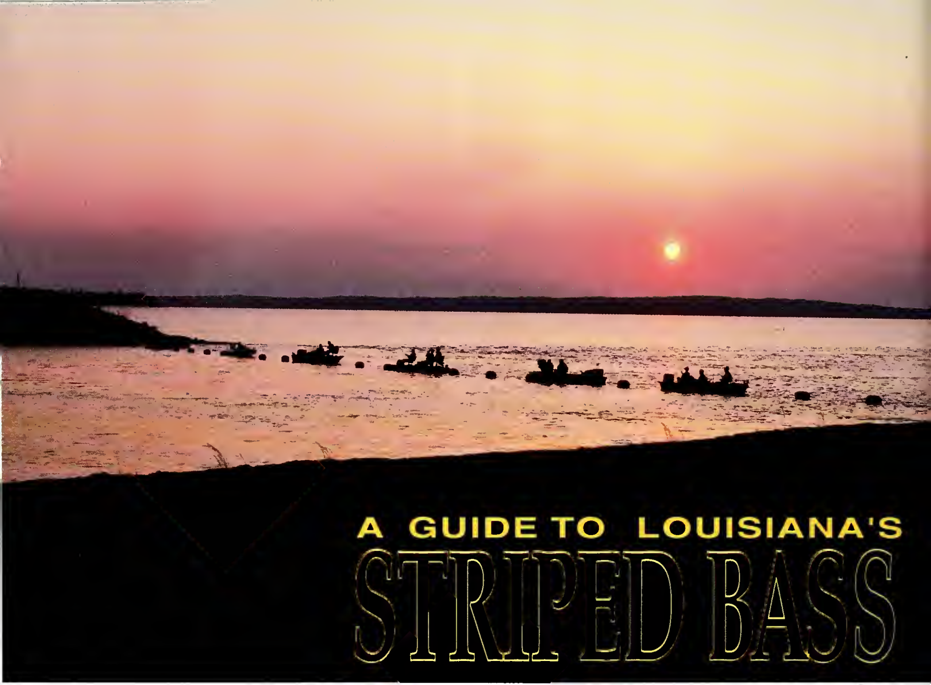
- **Brown Pelican Restoration**
- **Bald Eagle Monitoring**
- Study of the Alligator Snapping Turtle
- **Management of Bobcat and River Otter Populations**
- Deer Management Assistance Program
- Study of the Freshwater Mussel

(continued)

- North American Waterfowl Management Program
- Urban Nuisance Animal Control Program
- Freshwater Commercial Fisheries Management and Landing Report Program
- **Natural Heritage Program** required funding five full time professional positions to insure the adequate management of protected, rare, threatened, and endangered species of animals and plants, as well as distinctive natural habitats.
- **Upland Game Program** oversees the restoration of quail, dove and rabbit and requires three staff members, though in the past has required as many as 11.
- Cooperative fish kill investigations







LDWF file photo

A GUIDE TO LOUISIANA'S STRIPED BASS

BY DAVE ARNOLDI

Since stocking began in 1965, the striped bass sport fishery in Louisiana has exploded. With the right equipment and a little know-how, catching stripers weighing 20 pounds or more can become routine.

Striped bass (*Morone saxatilis*) were historically found in most of Louisiana's coastal rivers. By the 1950s, however, the stripers had disappeared, possibly as a result of changes in the rivers such as pollution and channelization.

In 1965, the Department of Wildlife and Fisheries began stocking striped bass in Toledo Bend Reservoir and D'Arbonne Lake. Coastal rivers were also stocked to re-establish historical populations. These efforts proved successful and striped bass are once again a common catch for Louisiana fishermen from the Red River to the Gulf of Mexico.

The Toledo Bend Reservoir boasts a striped bass fishery that encompasses almost the entire year. The peak period for striper fishing in the reservoir is in late winter through early spring period from late January to May. At this time striped bass move down to the turbulent area in front of the hydroelectric powerhouse. Fishermen tie or anchor at the buoy line in front of the turbines. A favorite angling method is to float in jigs or live bait almost to the turbine grates and work the bait slowly back to the boat. Depending upon the current, jigs from 1/2 to 1 ounce are used. Colors vary, with green, yellow, chartreuse or red jigs being preferred, often used in conjunction with pearl or white soft plastic trailers. Large golden shiners are also used.

Bank fishermen congregate at the dam adjacent to the microwave tower to catch striped bass moving from the turbines to nearby shallower waters. Generally, the greatest success occurs during foul weather, such as thunderstorms, preceding spring weather fronts. Favorite baits are redfins, pencil poppers, hot spots, rattletraps or bucktail jigs in this shallow area.

After May, striped bass leave the powerhouse area and disperse up the reservoir, often schooling and feeding voraciously on shad in the early morning and late afternoon. Surface lures such as Boy Howdy, Zara Spook, Pencil Poppers and Rattletraps do well on these fish. After surface activity stops, additional stripers may still be caught with jigs or deep-diving lures. Until July, striped bass will continue to move above the Pendleton Bridge area. Bucktail jigs, slab spoons and deep-diving baits are preferred.

In open water areas, trolling deep running baits into located schools is a preferred technique. Reluctant fish may sometimes be coaxed into biting by vertically jigging bucktail jigs, slab spoons or live bait. In timbered areas an effective method is "strolling", in which a jig is cast behind the boat, with a trolling motor being run at a very low speed over a located school. Work the jig a few feet over the school and not directly in it. Hits will often be light and subtle. Live bait is also effective in timbered areas.

When cool fronts come through in the fall, striped bass leave the power pool area and move uplake, feeding in schools as they do in late spring. Fishing methods are similar in both seasons.

Excellent opportunities for bank fishing are also available in the powerhouse tailrace below the reservoir from late January through late May. The legal area for bank fishing begins several hundred yards below the powerhouse. Fishing in these turbulent waters can be fast-paced and rewarding, with trophy-sized fish being abundant. It is not uncommon to catch 20 -to-30 pound stripers in this area. Favored fishing times below the turbines are during periods of powerhouse operation. Active feeding periods often coincide with sunrise and sunset, or during cloudy days or days with frontal activity.

The bait of choice in the tailrace is 3/4-to-1 ounce bucktail jigs in plain lead or roadrunner design with or without a soft plastic trailer. Colors vary with striped bass showing a preference for white, red and yellow, green and white or chartreuse. Surface baits such as redfins and pencil poppers do not offer proper action during generating periods, but are good choices during slack water periods.

Another area for catching trophy sized striped bass in the early summer is in the pools below the spillway. Constant cool water discharges from the reservoir hypolimnion keep this area relatively cool and offer striped bass a thermal refuge. Live shiners and live or cut shad are the preferred baits in this area, particularly in the second and third pools. Rattletraps and mid-water diving lures can also be used with success here. In June 1991, a fisherman angling in the third pool caught and entered a 47.5 pound striped bass for a new state record. Just one week earlier, a crappie fisherman using a #4 hook with a shiner caught and ate an unofficial 48 pound striper without entering the fish into official state records.

Mississippi River

Sport fishing for striped bass has increased greatly in recent years in the Mississippi River

Stripers, such as the one pictured below, offer freshwater anglers the opportunity to catch the biggest fish of their lives.

LDWF file photo

Stripers can be found in river systems around the state, including the Pearl River, the Atchafalaya River, the Sabine and the Calcasieu River. At Toledo Bend Reservoir, bank fishermen find success (right) by congregating at the dam to catch stripers moving from the turbines to nearby shallow waters.

LDWF file photo

system from Lake Providence to the mouth of the river. One of the best overall places is the mouth of the river near Venice. One advantage of fishing this area is the diversity of sportfish species, with the possibility of catching red drum, spotted seatrout, largemouth bass, crappie, white bass and striped bass all within close proximity. Peak fishing for striped bass occurs from August to November, a period of generally low flows and clearer water. Fishermen look for sandbars, points and riprap, and where water is seen moving through cuts. Striped bass will also often feed at the surface on large schools of baitfish. These fish can be caught on rattletraps, jigs, and saltwater poppers with 1 1/2 -to-3 foot trailer pulling a 1/4 -to-3/8 ounce jig with a twist-action jig tail. Bigger stripers can be enticed to bite by chumming with cut shad into the current, or vertically fishing saltwater jigs with white, chartreuse or white bodies. For vertical fishing, use jig sizes of 1/4-to-3/4 ounces, depending upon currents. Other baits used with success are deep-running Rebel Fast Tracks, Shad raps, chartreuse spinner baits, and Magnum Rapalas. The newly-established cuts at Lamogue and Caernarvon also offer good fishing.

In other parts of the Mississippi River, the best bet for concentrations of striped bass are near dikes built by the U.S. Army Corps of Engineers for channel stabilization and erosion control. In fishing for striped bass in these areas, look first for breaks in the dike that allow water currents to flow directly through. Cast a deep-diving crankbait beyond the cut and retrieve it slowly until the bait enters the moving water. Once in the moving water, slow or stop the retrieve until the bait rises. This baitfish mimicking action will often result in a strike. In the dike pools themselves, schooling stripers will often feed frantically on shad and other forage fish. Schooling stripers will take any number of baits, including jigs, Rattletraps, Zora Spooks, Boy Howdys and others. If the feeding activity has slowed down, it is still possible to catch stripers by vertically fishing jigs or deep-diving crank baits.

Good striper fishing is also found on active oxbow lakes adjacent to the Mississippi River. In recent years, catches of striped bass have increased greatly in Old River at Vidalia, Old River at Deer Park and at Yucatan, and Palmyra. When the Mississippi River is falling, small jigs fished in run-outs of these oxbows can be very rewarding. Rattletraps, Hotspots, Little George, and plastic grubs and jigs produce good catches of stripers.

Pearl River and Vicinity

Pearl River has received a large number of striped bass fingerlings since first being stocked in 1969. The winter months of December through January offer good striped bass fishing, particularly with cut bait and live shrimp. In nearby Lake Borgne, a coastal brackish bay that the Pearl River flows into, the striper fishery is best during February and March, with crank baits and jigs of white, chartreuse and fluorescent colors being the top baits. Lake Borgne, the Rigolets, Lake Pontchartrain, Chef Menteur Pass, the Industrial Canal and the mouth of the Tchefuncte River also are areas that striped bass favor. Fishermen here locate fish on depth finders, then fish with cutbait, shrimp or jigs.

Atchafalaya River

Like the Mississippi River, striped bass populations have increased greatly in the Atchafalaya River in recent years. One excellent fishing location is in the area of Six Mile Lake to Wax Lake Outlet. The peak fishing season runs from February/March through May in this area. Best lures to use are red or orange-headed jigs with saltwater tout tails, chrome Rattletraps and spinner baits.

Another popular striped bass fishing area is located just downstream of the Butte Larose Landing. Recreational fishermen catch stripers during late July and early August using 1/2 ounce or less spoons under schools of white bass.

The rock weir at Grand Lake below Myette Point offers similar fishing opportunities as the dikes on the Mississippi River. Stripers congregate below this weir in the spring and summer months and are caught mainly on saltwater touts with red or orange heads.

Calcasieu River

Most fishing for striped bass takes place in the late summer through fall months on the lower reaches from the I-10 bridge to Ward 8 park north of Lake Charles. Rattletraps, jigs, sting ray grubs and redfins are the most commonly used artificials, while live shrimp and menhaden are the best live baits. The area of the U.S. Army Corps of Engineers Salt Water Barrier, located just north of Lake Charles, has yielded good catches of striped bass.

Sabine River (Lower reaches)

Most striped bass caught in the Sabine River likely originated in Toledo Bend Reservoir. Rattletraps, spoons, crankbaits and jigs are the most likely lures to successfully land stripers. Live bait, consisting of shad, shiners, crawfish and bream, also produces incidental catches of striped bass in the Sabine River.

Red River

While striped bass are known to occur in the Red River, the fishery is limited at present due to changing water levels, high turbidities and limited access. When the lock-and-dam system is completed as part of the Red River Navigational Project, it is likely that the fishery will improve due to lower turbidities and better access to the river. Similar success with striped bass was noted on the Arkansas River after the lock-and-dam system was implemented there.

Three Northwest Louisiana lakes in the Red River System (Cross, Caddo and Bistineau) have tailrace fisheries for striped bass and hybrid striped bass primarily from January through March. Preferred lures are bucktails and large redfins at both the Lake Bistineau/Loggy Bayou tailrace and at the Caddo Lake/Twelve Mile Bayou tailrace. ■

RIGS TO REEFS:

Historic Old Platforms become State's Newest Reefs

BY RICK KASPRZAK
PHOTOGRAPHY COURTESY OF
KERR-MCGEE CORPORATIONS

In late September 1993 three of Kerr-McGee's historic platforms located in the birthplace of the offshore oil and gas industry became the state's newest artificial reefs. The platforms, located in Ship Shoal Block 214 some 80 miles southeast of Morgan City, were toppled in place as part of the Louisiana Artificial Reef Program. The former Ship Shoal Block 214 B, C and G structures are now called McPherson's Reef, after Frank A. McPherson, Kerr-McGee's chairman and chief executive officer. McPherson was responsible for and supervised the installation of the Block's first platform in 1961 and was instrumental in the development of the Ship Shoal 214 area. As CEO some 32 years later, McPherson has witnessed not the death of the aging platforms but their rebirth and continued use as artificial reefs. Instead of producing oil and gas the structures are now maintaining fisheries habitat for generations to come.

The region of the Gulf of Mexico known as the Ship

Shoal Area became the birthplace of the commercial offshore oil and gas industry in 1947, when Kerr-McGee completed the world's first commercially successful oil platform out of sight of land. Offshore drilling made sense to geologist Dean McGee. It was long recognized that oil and gas reserves were associated with salt domes on land, so why not in Louisiana's offshore waters in the Ship Shoal Area? Early in 1946 Kerr-McGee acquired the first leases 43 miles south of Morgan City. These leases covered some 40,000 acres in fairly shallow water.

One year later Kerr-McGee decided to drill its first offshore well in Ship Shoal Block 32. However, no one had devised a method or constructed oil field equipment that could operate in 18 feet of water 10 1/2 miles from the nearest land. Utilizing new techniques which resulted in the development of Louisiana's brand new offshore industry, Kerr-McGee began drilling operations on September 12, 1947. Twenty-two days later on the morning of October 4, 1947, they struck oil. During its peak capacity, Ship Shoal Block 32 was producing 648 barrels per day and went on to produce 1.4 million barrels of oil and 307 million cubic feet of gas before being plugged, dismantled and towed to shore in October 1984. Prior to 1986, when the Louisiana Artificial Reef Program was created within the Louisiana Department of Wildlife and Fisheries, Such would have been the fate of Kerr-McGee's three platforms at Ship Shoal 214. However, Kerr-McGee's compliance manager, Cary Bradford, and their regional foreman, Richard Doggett, could not see turning the old structures, which have become "old friends and family" into a pile of scrap. Thanks to Louisiana's new program, the platforms will continue a useful life as an artificial reef.

With the advent of new technology, offshore oil and gas companies quickly extended the offshore frontier into waters in excess of 100 feet. In 1961 Kerr-McGee found oil and gas in Ship Shoal 214 and installed platforms which immediately began producing oil and gas as well as attracting abundant fish populations.

These platforms, like natural reefs, provide reef dwellers with the hard-bottom habitat necessary to sustain them. The framing provides the necessary surface to raise communities of algae, corals, bryozoans and barnacles. These in turn create hiding places and food for large communities of fish and other marine life such as lobsters and crabs. Because the platforms provide an important source of hard substrate which naturally attract fish, they harbor 20-50 times more fish than the nearby soft bottom environments of the Gulf of Mexico. Since the platforms have been standing on the sea floor for 32 years, they already have a well developed marine fauna. The problem was how to turn it into a reef.

Fortunately for Kerr-Mcgee the three platforms were within one of nine Artificial Reef Planning Areas designated by Louisiana's Artificial Reef Plan. These planning areas were developed to be compatible with artificial reef development by minimizing user group conflicts and encouraging industry participation by facilitating platform abandonment planning.

First, all the wells were plugged with cement below the seabed. Structures were then decontaminated and stripped of helidecks, processing units, tanks and living quarters. The decks were then removed and lowered to the sea floor. All that remained was a metal skeleton weighing some 420 tons.

The photograph below shows the reaction of severing the pilings from the gulf floor. The next step is to actually topple the platform in the water.

The next phase of the operation required severing the structure from the sea floor. More than 30 years ago pilings were driven through the jacket legs to anchor the structure. Using specific equipment, the pilings were cut sixteen feet below the mud line freeing the platform from the seafloor. A huge derrick barge then moved alongside and chains and cables were attached. One by one they were pulled over, converting the aging platforms into reefs.

The new reefs, located in 115 feet of water, created about seven acres of hard bottom habitat and provides a site for future expansion. Later this year Kerr-McGee plans to increase the size of the reef with two additional platforms.

In 1992, two other platforms in the same general area were unexpectedly added to the reef program, courtesy of Hurricane Andrew. As Andrew's 140 mph winds slammed into the two platforms, which were owned and operated by Kerr-McGee and UNOCAL, they were either destroyed or severely damaged. After a year of plugging and properly abandoning the wells and removing all potentially

Recycling Louisiana's old oil and gas platforms will aid in Louisiana's abundant fishing industry for many generations to come. Instead of turning them into scrap metal, they become the home for a wide variety of fishery habitats.

hazardous equipment, the platforms were made environmentally safe and donated to the Program, bringing the total in the area to five.

In addition to the structures, Kerr-McGee and UNOCAL also donated a portion of the savings realized through their participation in the Louisiana Artificial Reef Program and, thus, not having to tow the structures to shore for dismantling and salvage. Toppling the structures in place maintains the sea life that resides in the area and costs less than the traditional onshore dismantling. The donations are placed in a legislatively protected trust fund and the interest generated is used to monitor and maintain the reef sites.

Cary Bradford said "All parties came away happy. The state got a reef for it's fishermen, Kerr-McGee saved money on removal and provided reef habitat but, more importantly, the fish kept their home."

With the three platforms donated by Kerr-McGee, a total of 37 platforms have now been converted into artificial reefs off Louisiana shores. These provide some 80 acres of hard bottom habitat which would have otherwise been lost to the scrap heap. Other companies participating in the Program include AGIP, CNG, Chevron, Delmar, Elf, Exxon, Forrest, Kirby, Mesa, Mobil, Odeco, Oxy, Shell and Texaco.

With Louisiana's Artificial Reef Program the oil and gas industry has a viable alternative to recycle old platforms instead of dismantling them and towing them to shore as scrap. This valuable fishery habitat will be aiding our fisheries resources for generations to come. As Joe Herring, Secretary of the Department of Wildlife and Fisheries pointed out, "With proper care and maintenance they should last about 300 years." ■

REEF LOCATOR CHART

NAME	AREA/BLOCK	DONOR	DATE	DEPTH (ft.)	LATITUDE	LONGITUDE
ANGEL	WC-616/617	MOBIL	06/29/92	305	280313	931820
ANGEL	WC-616/617	MOBIL	12/29/88	310	280259	931823
ANGEL	WC-616/617	EXXON	07/21/91	300	280327	931842
ANGEL	WC-616/617	CNG	08/01/90	310	280255	931852
ANGEL	WC-616/617	EXXON	12/15/88	308	280301	931900
ANGEL	WC-616/617	EXXON	11/20/88	300	280250	931900
ANGEL	WC-616/617	EXXON	07/15/93	305	280328	931904
BARNACLE	WD-89	AGIP	08/17/93	196	285538	893659
BUCCANEER	EI-366	FOREST	07/18/92	345	280714	912450
BUCCANEER	EI-366	DELMAR	09/23/92	345	280727	912508
COCONUT	EC-273	TEXACO	09/04/93	178	282550	923930
COCONUT	EC-273	TEXACO	09/04/93	178	282550	923931
COCONUT	EC-273	CHEVRON	07/07/93	180	282533	923956
COCONUT	EC-273	CHEVRON	07/09/93	180	282527	923956
DESPARATION	SS-230	KERR-MCGEE	10/15/93	120	282830	910210
DESPARATION	SS-230	KERR-MCGEE	10/13/92	120	282826	910213
DUVAL	SS-215	UNOCAL	11/29/93	107	283024	905409
HARBOR	ST-86	ODECO	09/20/91	91	284644	901402
HURRICANE	WD-134	KIRBY	01/21/92	280	284404	894405
HURRICANE	WD-134	SHELL	06/04/92	275	284420	894410
HURRICANE	WD-134	MMS	01/21/92	280	284354	894418
HURRICANE	WD-134	ELF	04/17/93	280	284413	894420
MCPHERSON	SS-214	KERR-MCGEE	10/13/93	108	283026	905131
MCPHERSON	SS-214	KERR-MCGEE	10/13/93	108	283012	905145
MCPHERSON	SS-214	KERR-MCGEE	10/13/93	108	283012	905148
NAUTICAL	WC-608	CHEVRON	02/05/93	260	280622	931829
NAUTICAL	WC-608	CHEVRON	10/16/92	260	280630	931831
PELICAN	WC-595	UNOCAL	11/15/91	245	280854	931730
PELICAN	WC-595	KERR-MCGEE	05/15/92	240	280901	931731
PELICAN	WC-595	KERR-MCGEE	05/16/92	240	280904	931732
SHELTER	SMI-146	CNG	08/25/90	238	281307	915836
SHELTER	SMI-146	OXY	10/30/87	238	281308	915846
SNAPPER	ST-128	CHEVRON	08/22/90	103	284014	901548
SNAPPER	ST-128	CHEVRON	09/27/88	103	284014	901549
TELEGRAPH	EC-272	CHEVRON	10/18/92	180	282503	923757
VOLCANO	SS-320	MESA	07/19/91	335	280813	911914
VOLCANO	SS-320	CNG	07/15/90	335	280837	911932

Aging Whitetail Deer

BY DAVID MORELAND

In 1949 C.W. Severinghaus presented the results of a Pittman-Robertson project in the *Journal of Wildlife Management* (vol.13 no.2). This report, entitled "Tooth Development and Wear as Criteria of Age in White-Tailed Deer ," provided deer biologists with a tool for aging and grouping deer into various age classes. Because the knowledge of age and growth is a key component of any wildlife program, Severinghaus' work opened the door for modern deer management.

Most hunters will generally tell you that they would like to harvest a deer worthy of hanging on the wall. For this to happen, the age factor of a buck must be considered. A good trophy buck is generally going to be one that is 3 1/2 years old or older. Bucks that are 1 1/2 and 2 1/2 years old are just too young to have big racks and generally are not worthy of mounting.

The 1992/93 deer season was a record book season for Louisiana. There were more than 20 bucks harvested that qualified for listing in state and national records. One reason for this increase in quality bucks is that many clubs are practicing quality deer management and are passing up some of the younger bucks and letting them live a year or two longer.

Many biologists believe that aging deer beyond the 2 1/2 year age class is a waste of time because of variations in wear due to different soil types and/or differences in foods eaten by deer. I personally believe that if one remains consistent with the key criteria for each age class deer can be placed into the various age groups based upon tooth wear. Most individuals should at least be able to separate deer into the fawn, yearling and adult age groups. This is sufficient information for determining the growth rate for deer in a particular herd and can be used for management purposes. Certainly there will be jawbones that show unusual or abnormal wear and in these situations it is best simply to leave them in the adult or 2 1/2 age class.

It is necessary to learn some general tooth anatomy in order to age whitetails. The enamel of a tooth is the hard calcareous substance covering the exposed portion of the tooth. As the enamel wears away it exposes the dentine, which is that part beneath the enamel containing the pulp chamber and root canals. An individual tooth consists of two or three parts known as cusps. Each cusp is comprised of two crests. The taller, inside, tongue-like crest is referred to as the lingual crest. Opposite this crest and occurring on the cheek side of the cusp is the smaller buccal crest. The infundibulum is the funnel-shaped passage between these two crests.

Only the teeth in the lower jaw are used in the aging process. The front teeth are referred to as incisors, and the remaining teeth are called premolars and molars. Deer do not have front teeth or incisors in the upper jaw. The

> ***Most hunters will tell you they would like to harvest a deer worthy of hanging on the wall. One way that becomes possible is through proper management of deer herds, in which younger bucks are allowed to live a year or two longer and grow larger racks.***

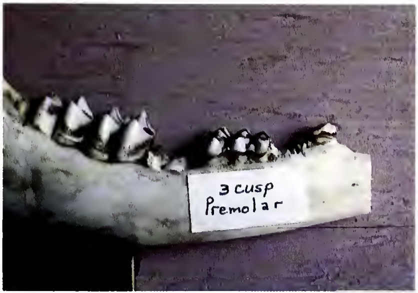


Figure 1A

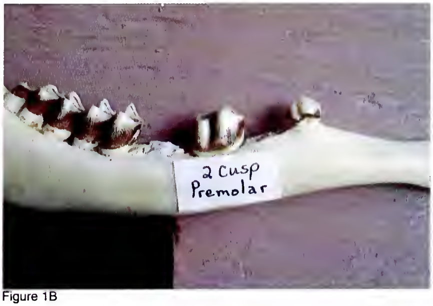


Figure 1B

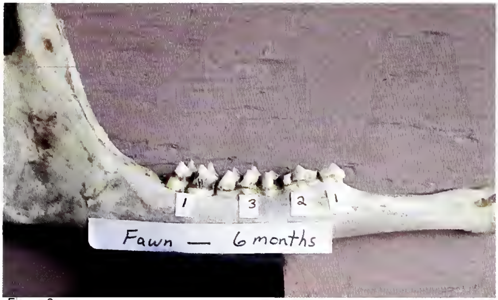


Figure 2

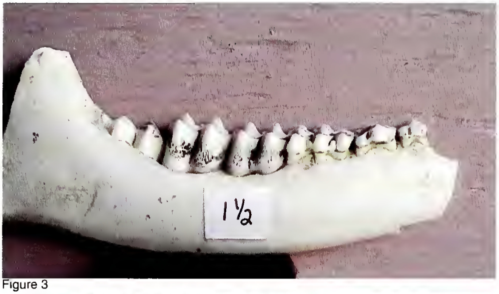


Figure 3

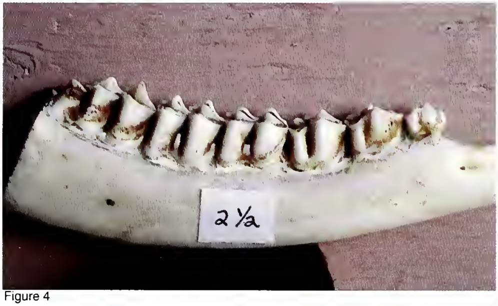


Figure 4

The above figures represent the three basic age classes of deer, fawns (figure 2), yearlings (figure 3) and adults (figure 4). Biologists use this age information to evaluate the physical condition of a deer herd. Without this age information, it is impossible to determine the age and growth for a particular herd.

molar teeth are multicuspids and are the main teeth to examine when aging deer. A cusp is a projection on the chewing (occlusal) surface of a tooth. The first premolars that a deer develops are deciduous (temporary). These temporary premolars are shed and replaced with permanent premolars, usually between 17 and 20 months of age.

The first step in the aging process is to remove a lower jawbone from the deer or open its mouth wide enough so that all molars are visible. A device known as a jawbone extractor is a handy tool to aid in this process. Adult bucks that are to be mounted can be aged by opening their mouth and viewing with a flashlight. These lower jawbones can be removed without damaging the cape, but it is probably best to let the taxidermist remove it.

The first tooth to examine is the third premolar. The structure of this tooth will determine if the deer is 1 1/2 years or younger, or if it is 2 1/2 years or older. If the third premolar has three cusps (figure 1A), the deer is 1 1/2 years or younger. The second premolar and first molar have been removed in Figure 1A for easier viewing of the third premolar.

If the third premolar has two cusps (Figure 1B) the deer is 2 1/2 years or older EXCEPT in situations where the third premolar is not fully erupted (at full height above the gum line and in line with the molars). In this case the deer should be placed in the 1 1/2 year age class.

The following information breaks down the age classes into three categories:

I. Fawns - (*Figure 2*) 6 month old age class

1) Premolars - Three temporary premolars; third premolar has three cusps.

2) Molars - Not more than one fully erupted molar. If only one or two points of the second molar are visible and beginning to erupt, the deer should remain in this age class.

3) Note general size of lower jawbone.

II. Yearlings - *(Figure 3)* 1 1/2 year old age class .

1) Premolars: a. Three temporary premolars; third premolar has three cusps. b. Premolars in the process of being shed, or three permanent premolars that are not fully erupted (at full height above gum line).

2) Molars - Two or three fully erupted molars. The third molar may be in various stages of eruption.

III. Adults - (*Figure 4)* 2 1/2 years or older age class

1) Premolars - Three permanent fully erupted premolars; third premolar has two cusps.

2) Molars - Three molars fully erupted. ■

A CLOSER LOOK

THE WATER CYCLE

By Lyle M. Soniat, Ph.D.
Louisiana Sea Grant College Program
Mary Alice Cain
East Jefferson High School

Water! The Floods of 1993 have had the subject of water on everyone's mind, up and down the Mississippi River. How high would the water get? Would the levees hold? Would the floods reach Louisiana? Where did all that water come from?

As the news media brought us scenes of the river's rise, destroying property and taking lives in Missouri and Iowa, the sheer volume of water involved was mind-boggling — and yet that is only a tiny fraction of the water which is always present in the atmosphere and on the earth's surface.

Water exists naturally on the earth and in the atmosphere in all three of its physical forms: solid, liquid and gas. Its chemical formula is H_20, which means that it takes two hydrogen atoms combined with one oxygen atom to make a molecule of water. Because these molecules are very small and light weight, they remain invisible and suspended in the air as the gas we call water vapor. When large numbers of them join together, they become the liquid water we all know and can see. If the temperature is below freezing, the molecules arrange themselves into a repeating pattern or solid crystal we call ice.

Water is constantly being transferred between the earth's surface and the atmosphere. This continuous exchange of water in all of its forms is called the **water cycle.** It involves processes that change water from one form to another, then back again, while moving it across great distances. The raw materials for the water cycle are air, water vapor, and liquid water in large quantities.

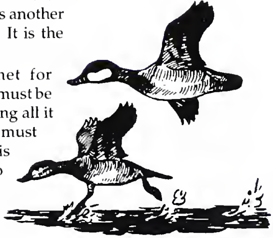
Take the Gulf of Mexico, for example. Every day the sun warms the surface waters enough to cause some molecules to evaporate—that is, to change from a liquid into water vapor. With 600,000 square miles of surface water in the Gulf of Mexico, the process of **evaporation** is going on all the time.

> ***Water is constantly being transferred between the earth's surface and the atmosphere. This continuous exchange of water in all of its forms is called the water cycle.***

Green plants, like trees and grass, add to the overall moisture content of the atmosphere by releasing water vapor as a part of their life processes. This process called **evapotranspiration,** contributes significantly to the water vapor in the water cycle.

If air containing this water is warmer than the air nearby, it will expand as it rises high in the atmosphere where temperatures are cooler. As the warm, moist air cools, it contracts. The molecules of water vapor are crowded closer together until they merge to form tiny droplets of liquid H_20 — water. This process, called **condensation,** is another important step in the water cycle. It is the process that produces clouds.

Three conditions must be met for condensation to take place. The air must be saturated with water vapor— holding all it can at its temperature. Then the air must be cooled. In our area cooling is usually the result of air rising into the colder layers of the atmosphere. Cooling crowds the water vapor molecules together. Third, the air must contain solid particles to which the condensing water can adhere to. These solid surfaces may be natural pollutants such as smoke particles or pollen grains or even salt crystals off the ocean. Without these solid particles, no clouds at all will form.



Condensation also occurs at and near

WATER CYCLE

the earth's surface. As air cools and contracts, near the ground, water vapor condenses into liquid water on the nearest available surfaces. Air cooling and condensing just above the ground produce clouds called fog. Fog often forms along Louisiana's bayous and marshes when the night air has chilled more quickly than water. Morning dew is condensation that forms on grass, automobiles and bicycles left out overnight. These items become the solid surfaces to which the condensed water attaches. If temperatures happen to be below freezing when the water vapor condenses, the clouds that form will be made of ice crystals instead of liquid water. At ground level, a beautiful and fragile coating of frost would result from condensation at temperatures below freezing.

About 97 percent of the earth's water is found in the oceans. Only one-thousandth of one percent of all the water on earth is in the air at any particular time.

As long as they remain inside a cloud, water droplets continue to grow larger and larger. Eventually gravity pulls them to the ground. This falling water is called **precipitation**. In Louisiana we usually see it in the form of rain but it may also occur in the form of snow, sleet or hail.

While clouds may seem to hold vast quantities of water suspended high above the earth's surface, water actually spends very little time in the atmosphere. About 97 percent of the earth's water is found in the oceans. Only one-thousandth of one percent of all the water on earth is in the air at any particular time.

Once the water is back on the ground it may **run off** directly into canals, streams, rivers or lakes, or it may **infiltrate** (soak into) the ground, but eventually most of it returns to the sea. Streams that empty into the Mississippi River send their water downstream to the Gulf of Mexico. Surface waters may take only days or weeks to travel back to the sea, while underground waters may take months or even years to complete the journey. There the water is ready to be recycled into the atmosphere by evaporation.

Of course, water may be evaporated directly from a lake or even the Mississippi River itself, starting the water cycle again from a new location. Or winds may push clouds long distances to rain far away from where they formed.

The water cycle may take many routes to carry its important cargo of H_20 to its destination, and many factors contribute to the path it follows in a given area. The shape of the land plays a role in the water cycle. Mountainous areas tend to drain waters more directly into streams and rivers, while flatter terrains may hold more water in ponds and lakes, once again making it available for evaporation.

The climate of an area is also important. In colder regions, water evaporates more slowly or remains as ice for extended periods.

The amount of surface water present adds significantly to the water vapor potential for clouds and precipitation. The composition of the rocks and soils each determine whether precipitation will infiltrate the ground or wash over the surface and into streams or rivers. The presence of rock layers which permit the infiltration of rain water encourages plant growth and retention of topsoil by plant roots. That same porous rock may also act as a natural filtering system for subsurface water sources.

Here in Louisiana's warm climate, abundant surface waters and bountiful plant growth mean that we can observe every process in the water cycle operating almost every day. Just go outside and have a look.

ACTIVITY

Make your own water cycle:

1. Place several inches of soil in one half of a small rectangular aquarium or transparent plastic shoe box. Pack the soil firmly.
2. Pour water slowly in the other half of the aquarium. The soil level should be slightly above the water level.
3. Cover the water half of the aquarium with clear plastic wrap and the soil half with aluminum foil. Seal all edges securely.
4. Shine a lamp into the side of the aquarium, through the glass, to simulate the sun.
5. Allow the light to shine for 15 minutes.
6. Now place several ice cubes on top of the aluminum foil.

What happened to the water inside the aquarium while the light was on?

What started to happen shortly after placing the ice cubes on the foil? Why?

What do you think was the purpose of the ice cubes?

Would we have seen the same results without the ice cubes?

What serves the same purpose in nature as the ice cubes?

What would happen to the water cycle if the atmosphere did not get colder with altitude?

Have you ever noticed that some rain drops seem to be much larger than others?

Why do you think this happens?

LAW LINES

Behind the Badge

BY CAPT. KEITH LACAZE

A so called "normal" work day for a wildlife agent can and often will include a variety of activities. Rendering assistance to the stranded hunter or fisherman, searching for lost persons and managing sick or injured wildlife are all elements of the job.

But the basic and primary function of a wildlife officer is enforcement of laws and regulations. In order to achieve compliance with seasons, bag limits and the many other regulations he is charged with enforcing, the officer frequently finds it necessary to issue a citation. Either through admission of guilt by the accused or a determination of guilt based on the evidence presented by the officer, the citation will most often result in the payment of a fine. Since wildlife agents issue more than 20,000 citations per year on average in Louisiana, a substantial amount of money is collected as fines.

Many people incorrectly believe that all fine money collected is received by the Department of Wildlife and Fisheries. In fact only about 20 percent of the citations issued generate any income to the department. Let's examine the civil and criminal processes utilized in wildlife law enforcement and determine where fine money goes.

Of the more than 750 different offenses in the Wildlife and Fisheries code book, 61 are identified as class one violations. Class ones are minor infractions of hunting, fishing and boating laws. They are adjudicated and civil penalties assessed by hearing officers designated by the secretary of the department. Violators are assessed a penalty of $50 for a first offense, more for subsequent offenses.

Revenue from class one violations is deposited in the Conservation Fund of the Department of Wildlife and Fisheries. It is used solely for costs associated with hiring and equipping additional enforcement agents, providing a uniform cleaning allowance for field personnel and administering the class one civil penalty program.

How much money is generated from class one violations? Figures indicate that $121,253.62 in fines and hearing costs was collected in the last half of 1993, including full and partial payments. Civil penalties were enacted in 1990 and the department began collecting fines the following year. Since 1991 nearly $800,000 has been derived from civil penalties for class one violations.

Civil penalties for restitution of the value of wildlife and aquatic life are also collected by the department. Legislation passed in 1988 authorizes the recovery of the value of fish, wild birds, wild quadrupeds and other wildlife unlawfully killed, caught, taken, possessed or injured. Rules to establish the guidelines for determining the value of injured or destroyed wildlife were adopted by the Wildlife and Fisheries Commission. Collection began in 1991 and $136,623.90 in restitution has been recovered. Civil restitution penalties are deposited in the conservation fund.

The final source of revenue created by law enforcement is the sale of confiscated commodities. When perishable items are seized in connection with a violation, the items are sold and the proceeds held in an escrow account until the disposition of the case. Upon conviction the proceeds are received by the department.

Revenue from the sale of forfeited things such as vehicles, boats and guns is also collected. In the last half of 1993, $52,939.85 was acquired through such sales. In 1991, legislation mandated that proceeds from commodities sales must be used solely for uniform maintenance and acquisition of equipment for enforcement agents. Almost $210,000 has been received by the Enforcement Division since passage of the law.

While the department does receive some revenue from enforcement activities, it is important to remember that the majority of wildlife violations are handled by state and federal judicial districts. The fines and court costs from these violations are received by the parish or judicial district with jurisdiction. How much money do they receive? It is impossible to determine exact figures since the department does not receive a complete accounting of all fines and penalties. The various courts also establish fines within a framework provided by law.

For example: A class two violation, first offense, carries a penalty of not less than $100 nor more than $350, or imprisonment for not more than 60 days or both, plus court costs. The court has much latitude in fine assessment and in most violation classes, the more serious the penalty, the greater degree of latitude.

We do know that of the 20,000 or more citations issued annually, only about 7,000 are class one and thus handled by the department. The remaining approximately 13,000 are adjudicated by state and federal courts, with fine revenue collected by those systems.

As seen here, the department generates little revenue from violation penalties, contrary to the popular belief that all fine money goes to this agency. It is becoming increasingly evident that we must seek other revenue sources if current levels of service are to be provided in the future. Hopefully, we can dispense with misinformation and work together to discover additional funding. With wildlife protection on the line, we can't afford not to.

A *Louisiana Conservationist*
Photography Contest

Louisiana Conservationist magazine is looking for top quality photographs for the 1994-95 outdoor calendar. The theme this year is:

The Outdoors Sportsman

The focus of the 1994-95 calendar will be interaction between people and the environment. Each photograph must include at least one person.

Hunting, Hiking, Fishing, Swimming, Boating, Camping, Sailing or otherwise enjoying Louisiana's Outdoors.

AWARDS: Submissions will be judged in three categories. Three winning submissions and one honorable mention from each category will be selected for publication. Winners will be awarded a cash prize according to the following: ***$100 for first place, $75 for second place, $50 for third place, and $25 for honorable mention. A cash prize of $200 will also be awarded for Best Overall for use on the front cover.*** There is no limit to the number of photos you may submit.

CATEGORIES: (all photographs must show at least one person.)

A. The Sportsman — Whether it's fishing or hunting, Louisiana's bounty provides ample opportunity for sportsmen and women to test their skills. Our forests, bayous, lakes and rivers are home to a myriad of creatures that challenge our expertise and earn our admiration. Send in your best hunting or fishing photos.

B. Scenic Wonders — Contemplative, majestic, breath-taking: Louisiana's many natural wonders. Whether its the thick and drowsy air of an ancient cypress forest by moonlight, the majesty and grandeur of the mighty oaks, or a breezy summer picnic on the Gulf Coast — there's so much to see and enjoy. Put yourself in the picture.

C. Outdoor Activities — Show the world those other sports that give the "Sportsman's Paradise" its name. Take us hiking. Take us camping. Take us canoeing. Take us birding. (Hunting and fishing pictures are not eligible in this category.)

CONTEST RULES:

1. A non-refundable entrance fee of $5 must be remitted with each application. Please make check or money order payable to *Louisiana Conservationist. DO NOT SEND CASH!*

2. Submissions, along with a completed application and entry fee, will be accepted from Monday, January 3, to Friday, April 15, 1994. Send to: *Louisiana Conservationist 1994-95 Calendar*, Louisiana Department of Wildlife and Fisheries, P.O. Box 98000, Baton Rouge LA 70898-9000.

3. Entries will not be returned unless a self addressed envelope with certified postage is provided.

4. Only transparencies and first-generation duplications are eligible. ***PRINTS AND NEGATIVES WILL BE NOT CONSIDERED.***

5. Each submission must be numbered to correspond with a number on the completed application. The photographer's name, address, and phone number must be indicated on *EACH* transparency.

6. Photographers must submit appropriate category of competition (A, B, C), as well as the location where each photograph was taken.

7. The submitted image must be horizontal, suitable for calendar.

8. Only photographs that have never been published before are eligible. The Louisiana Department of Wildlife and Fisheries retains all first publication rights on all winning photographs.

9. Only pictures taken after January 1992 are eligible.

10. There is no limit to the number of entries one photographer may submit.

11. This contest is not limited to Louisiana photographers.

12. Only photographs taken in Louisiana are eligible. Photographs with captive, domestic, or exotic species are not eligible.

13. Employees of the Louisiana Department of Wildlife and Fisheries and their families are not eligible.

14. Magazine editors have final decision on categories and awards.

OFFICIAL ENTRY FORM: *(this form may be photocopied)*

Name: ____________________

Address: ____________________

City: ____________________

State: ______ Zip: __________ Phone number: ____________________

Each submission **must** be numbered and labeled with name, address and phone number. *(there is no limit to the number of submissions)*

Entry No.	Category (A,B,C)	Location *(include Parish)*

Send transparencies, completed application, and $5 entrance fee to:
(Make checks payable to Louisiana Conservationist)
Louisiana Conservationist 1994-95 Calendar
Louisiana Department of Wildlife and Fisheries
P.O. Box 98000
Baton Rouge LA 70898-9000

CONSERVATION notes

LDWF Recognized Nationally for Boating Access Program

The Department of Wildlife and Fisheries received the American League of Anglers and Boaters' (ALAB) 1993 Boating Access Program Award for the agency's work to publicize Louisiana's Boating Access Program.

Louisiana's Boating Access Program is composed of 25 completed projects and 16 active projects that include a boat harbor, a marina, a water control project, navigational aids and numerous boat launches and piers. These projects are federally funded by the Aquatic Resources Trust Fund, established in 1984 by legislation coauthored by Sen. John Breaux of Louisiana and Sen. Malcolm Wallop of Wyoming.

The ALAB, composed of more than 60 nonprofit organizations, businesses and corporations, was formed in 1985 as a watchdog for the Aquatic Resources Trust Fund. The trust fund provides about $330 million annually to states for boating access and boating safety programs, wetlands conservation efforts, sport fish enhancement and research.

LDWF Agent Named Officer of the Year

Enforcement Agent Lt. Larry B. Matherne was presented the Wildlife Officer of the Year Award by Shikar Safari International on Jan. 6, 1994.

Matherne, who has worked in LDWF's Enforcement Division for nearly 18 years, was selected to receive the award because of his "professionalism beyond comparison," according to Shikar Safari International President Bill Simmons. Simmons particularly praised Matherne for his efforts during "Operation Goldkey," a sting operation resulting in 47 arrests of individuals involved in a redfish laundering scheme in Mississippi and Louisiana. The arrests in July 1993 were the culmination of a yearlong investigation.

Shikar Safari awards a Wildlife Officer of the Year in each state "in recognition of meritorious service in the field of wildlife conservation and law enforcement."

Public Contributions Help Reforestation

The Louisiana Department of Wildlife and Fisheries is asking the public for assistance in restoring the state's historical bottomland hardwood forests. The needed help is in the form of monetary donations to enable the department to purchase acorns and other hardwood seeds for planting.

"The department owns or manages thousands of acres of land that were cleared for agriculture uses in the 1960s. We want to restore these areas to the hardwood forest systems that once existed, providing quality wildlife habitat for future enjoyment," said LDWF Forestry Supervisor Kenneth F. Ribbeck.

Ribbeck stressed that potential donations should not include actual acorns or seedlings. "Many people collect fallen nuts out of their front yards and send them to us," he said. "Most arrive dried out and we can't use them."

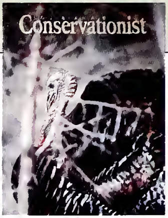
The cost of hardwood acorns varies from species to species, costing from $1 to $20 per pound. It also may take anywhere from three to 20 pounds to cover an acre.

The Louisiana Wildlife Federation has pledged to purchase acorns and forward them to LDWF. The Louisiana Wild Turkey Federation and the National Wetland Research Center in Lafayette already have made donations.

Donors should send contributions to Randy Lanctot, Louisiana Wildlife Federation, P.O. Box 65239, Baton Rouge, LA 70896-5239.

Lifetime Licenses Holders

Bateman, James	New Orleans
Boudreaux, Christian	Napoleonville
Branton, Van	Bogalusa
Broussard, Brady	New Iberia
Broussard, George	Morgan City
Burnell, Michael	Denham Springs
Burr, Raymond	Mansfield
Callegari, Charles	Lafayette
Celestin, Chad	Baton Rouge
Clements, Dale	Morgan City
Clements, David	Morgan City
Crochet, Theron	Houma
Defatta, Philip	Shreveport
Dwillis, Catherine	Jefferson
Eichelberger, Kerry	Port Allen
Freyou, John Jr.	New Iberia
Freyou, Matthew	New Iberia
Garrison, David	Houston, TX
Garrison, Robert	Houston, TX
George, Kenneth	Pearl River
Goodwin, Lucas	Port Allen
Guin, Billy Jr.	Shreveport
Jones, Douglas	Slidell
Kilpatrick, Thaddeus	Covington
Lasseigne, Charles	Port Allen
Lister, Ronald	Jefferson
Lutschg, Kenneth	Baton Rouge
McMeel, Amber	Houma
McMeel, Dawn	Houma
McMeel, Margaret	Houma
Miller, Darren	Gibson
Morton, Justin	DeRidder
Morvant, Daniel	Thibodaux
Morvant, Kayne	Thibodaux
Nicholson, Robert Jr.	Baton Rouge
Olsen, Lloyd Jr.	Houma
Ponti, Michael	Metairie
Rodrigue, Chad	Vacherie
Roszelle, William	Thibodaux
Sintes, Steven	New Orleans
Sistrunk, Jason	Calhoun
Wells, Frank	Prairieville
Womack, James	Zachary
Almond, James	Baton Rouge
Andrews, Brandon	Amite
Brady, Patrick	Shreveport
Cheramie, Hugh	Cut Off
Cockerham Jerry	Baker
Duplantis, Jeffery	Houma
Duplantis, Keith	Houma
Durio, Dalton	Opelousas
Hough, Jacob	Saline
Knight, Emmitt	Monroe
Langlinais, Derrick	Thibodaux
Manning, Michael	Greenwell Springs



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Bayou Kitchen

by Wayne Miller

Photo by Ken Glaser

Crawfish Corn Bread

2	cups yellow corn meal
3	eggs
1	can cream style corn
1 1/2	cups graded cheddar cheese
3	teaspoon baking powder
2	jalapeno peppers, finely chopped
1	teaspoon salt
1/2	cup bell pepper, finely chopped
1/2	teaspoon soda
1	onion, minced or grated
1/2	cup cooking oil
3/4	cup chopped green onions
1	cup milk
1	lb. crawfish tails

Saute onions and bell pepper in small amount of butter. Allow to cook until onions become transparent. Add chopped jalapeno pepper. Set aside. Mix all other ingredients, except crawfish. Add cooked onions and peppers. Stir in crawfish. Pour into lightly greased pan. Bake in preheated oven at 400 degrees 35-45 minutes.

Louisiana Crawfish Quiche

1	lb. crawfish tails
1	cup sliced fresh mushrooms
1	cup chopped green onions and tops
1/2	cup melted butter
4	eggs, well beaten
1/2	cups half-and-half or light cream
1	teaspoon salt
1/2	teaspoon dry mustard
1/8	teaspoon nutmeg
1	cup shredded mozzarella cheese
1	unbaked 9-inch pie shell

Saute mushrooms and green onions in butter until tender. Set aside. In large bowl, combine eggs, half and half, salt, dry mustard, nutmeg and cheese. Fold in crawfish, mushrooms and onions. Pour mixture into pie shell. Bake at 400 degrees for 15 minutes. Reduce heat to 300 degrees and continue to bake for 30 minutes or until knife inserted in center comes out clean. Allow to stand 5 minutes before serving. Serves 6.

Crawfish Potato Boats

1	lb. La. crawfish tails
4	large baking potatoes
1/2	cup butter
1/2	cup half-and-half
1/2	cup chopped green onions and tops
1	cup grated sharp cheese
1/2	teaspoon salt
	paprika
	fresh parsley

Clean potatoes and bake in 425 degree oven for 45 minutes. (Or in the microwave according to your oven instructions.) When cool to the touch, cut potatoes lengthwise to remove just the top third. Scoop out pulp, leaving a firm shell about 1/4 inch thick. Combine potato pulp, butter, half and half, onion, cheese and salt. Whip until smooth. Stir in crawfish. Stuff shells with crawfish mixture and sprinkle with paprika. Bake at 425 degrees for 10 minutes. Garnish with parsley. Serves 4.

Note: This item freezes well.